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21

QUALITY ASSURANCE PROJECT PLAN

RESIDENTIAL WELL WATER TEST
NEAR
AMERICAN CHEMICAL SERVICES, INC.
GRIFFITH, INDIANA

U.S. EPA-Hazardous Waste Enforcement Branch
230 South Dearborn Street, Chicago, IL 60604

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Region V, U.S. EPA

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APPROVALS:

Karen Waldvogel
RPM, REGION V — DATE 6-26-86

DIRECTOR, CENTRAL REGIONAL LABORATORY — DATE 7/14/86

David A Payne for James H Eidams Jr
QA OFFICER, REGION V — DATE 7-14-86

TABLE OF CONTENTS

I. INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) requires paticipation of all Superfund site investigators in a centrally managed quality assurance program. This requirement applies to all enivronmental monitoring and measurement efforts mandated supported by U.S. EPA.

Each investigator generating data has the responsibility to implement minimum procedures to assure that the precision, accuracy, completeness and representativeness of its data are known and documented. To ensure the responsibility is met uniformly, each investigator must prepare a written QA Project Plan (QAPP) covering each project's intended objectives and scope of work.

This QAPP present the organization, objectives, functional activities and specific QA and quality control (QC) activities associated with the residential well water quality investigation at American Chemical Services, Inc. The QAPP is designed to achieve the specific data quality goals of the investigation at the American Chemical Services, Inc. site.

II. PROJECT DESCRIPTION

A. Description, Objective, and Scope

Residents nearby the site own private wells, of which the water quality is not known.

The objective of the investigation is to evaluate the nature and magnitude of contamination, if any, in the residential wells.

The scope of the investigation is limited to the well water for hazardous substances/pollutants and nitrogen (NH_3 + NO_3/NO_2).

B. Background Information

The site is defined as American Chemical Services, Inc., Pazmey Corporation (formerly Kapica Drum, Inc.) and the City of Griffith Landfill. The landfill is an operating non-RCRA sanitary municipal landfill which may have taken hazardous waste in its early years of operation.

The RI/FS is under negotiation with the PRPs, and actual field work would not begin for several months until the paper work can all be completed.

The Lake County Health Department conducted a groundwater survey in 1984 including seven residential wells nearby the site. The results of the analyses showed that one of the seven wells contained benzene at 6.2 ppb and acetone at 900 ppb. Since the screen depths of these wells were never determined, it could not be assumed that the contaminated well is drilled and/or screened in a different aquifer than other wells in the area.

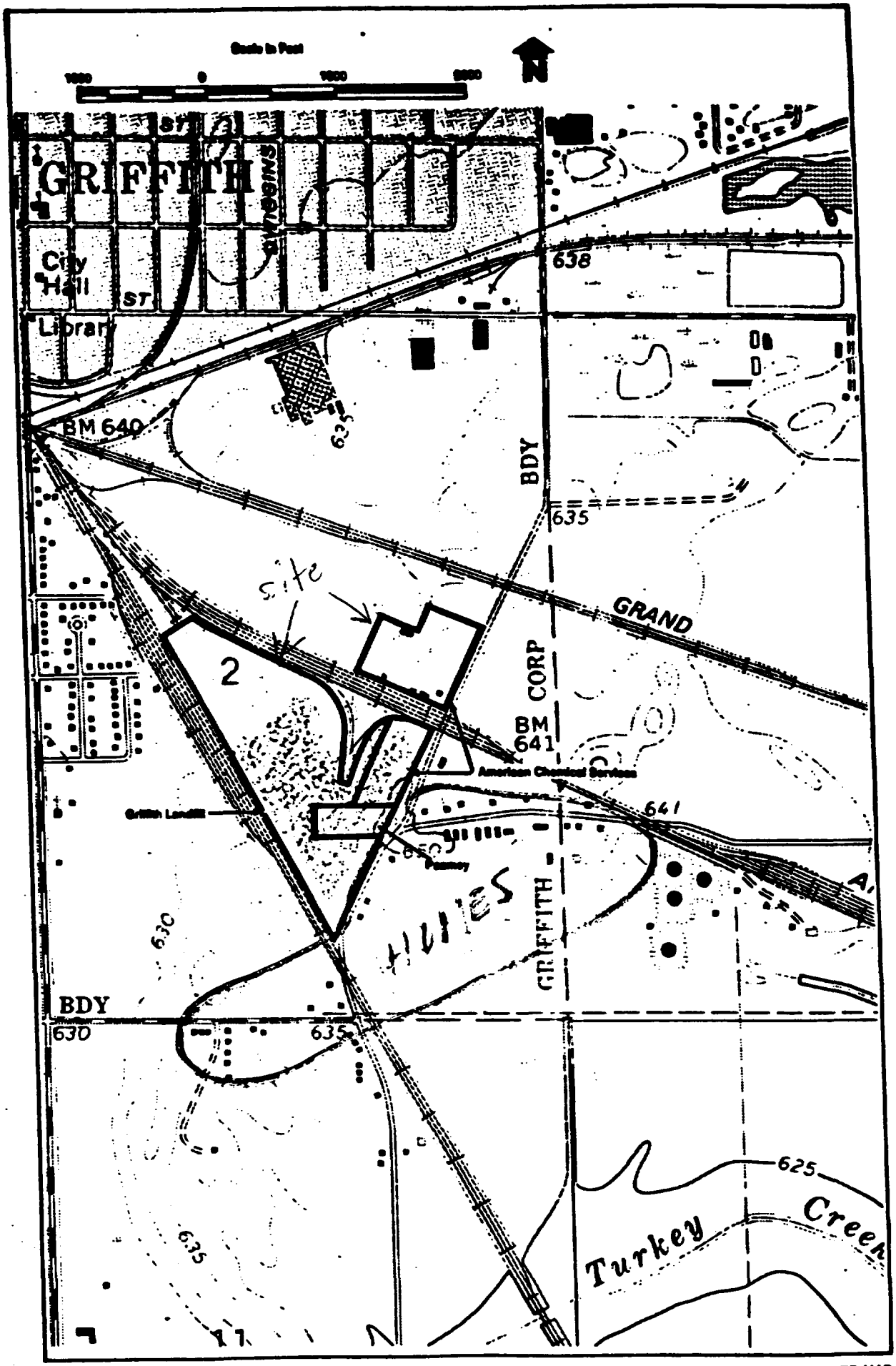

FIGURE 1-2 SITE MAP

C. Schedule of Tasks and Milestones

The sampling of the residential wells is scheduled on 7/28/86 or 7/29/86, and analyses will be done within sample holding time protocol of CRL.

D. Intended Data Usage(s)

To determine whether any hazardous substances/pollutants are contaminated in the drinking water. If contamination is present, an operable unit or an emergency action may be necessary prior to the RI/FS to ensure these residents of safe drinking water.

E. Monitoring (Sampling) Network Design and Rationale

Five residential wells nearby the site (circled area) including O'Niel Home, which showed contamination in the previous test conducted by the Lake County Health Department, will be sampled. The O'Niel well will be sampled in duplicate.

The Lake County Health Department will be contacted prior to actual sampling in order to coordinate sampling effort.

F. Sample Matrices and Parameters

Water will be sampled unfiltered for the following parameters:

Organics

- o VOC (see Table I)
- o B/N/A (see Table II)
- o Pesticdes/PCBs (see Table III)

Inorganics

- o ICP metals:
  *Al, *Ba, *Be, B, *Cd, *Ca, *Cr, *Co, *Cu, *Fe, *Pb, Li, *Mg, *Mn, *Mo, *Ni, K, *Ag, *Na, Sr, Sn, Ti, *V, Y, *Zn

  * These are the metals of primary interests. Non-asterisked metals are for informational purpose only.

- o Metals for Furnace AA: As, Pb, Se

- o Cold Vapor AA: Hg

- o CN (Screening): Cyanide will be determined for each positive cyanide screening result.

- o NO_3 + NO_2-N
- o NH_3-N

Detection limits are shown in Table IV.

TABLE I (ALL UNITS ARE MICROGRAMS/LITER)

PARAMETER	CAS #	METHOD DETECTION LIMIT IN REAGENT WATER
BENZENE	71-43-2	1.5
BROMODICHLOROMETHANE	75-27-4	1.5
BROMOFORM	75-25-2	1.5
BROMOMETHANE	74-83-9	10
CARBON TETRACHLORIDE	56-23-5	1.5
CHLOROBENZENE	108-90-7	1.5
CHLOROETHANE	75-00-3	1.5
2-CHLOROETHYL VINYL ETHER	110-75-8	1.5
CHLOROFORM	67-66-3	1.5
CHLOROMETHANE	74-87-3	10
DIBROMOCHLOROMETHANE	124-48-1	1.5
1,1-DICHLOROETHANE	75-34-3	1.5
1,2-DICHLOROETHANE	107-06-2	1.5
1,1-DICHLOROETHENE	75-35-4	1.5
trans-1,2-DICHLOROETHENE	156-60-5	1.5
1,2-DICHLOROPROPANE	78-87-5	1.5
cis-1,3-DICHLOPROPROPENE	10061-01-5	2
trans-1,3-DICHLOROPROPENE	10061-02-6	1
ETHYL BENZENE	100-41-4	1.5
METHYLENE CHLORIDE (*)	75-09-2	1
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.5
TETRACHLOROETHENE	127-18-4	1.5
TOLUENE (*)	108-88-3	1.5
1,1,1-TRICHLOROETHANE	71-55-6	1.5
1,1,2-TRICHLOROETHANE	79-00-5	1.5
TRICHLOROETHENE	79-01-6	1.5
VINYL CHLORIDE	75-01-4	10
ACROLEIN	107-02-8	100
ACETONE (*)	67-64-1	75
ACRYLONITRILE	107-13-1	50
CARBON DISULFIDE	75-15-0	3
2-BUTANONE	78-93-3	(50)
VINYL ACETATE	108-05-4	15
4-METHYL-2-PENTANONE	108-10-1	(3)
2-HEXANONE	519-78-6	(50)
STYRENE	100-42-5	1
m-XYLENE	108-38-3	2
o-XYLENE **	95-47-6	
p-XYLENE **	106-42-3	2.5

* COMMON LABORATORY SOLVENT - BLANK LIMIT IS 5x METHOD DETECTION LIMIT
** THE o-XYLENE AND p-XYLENE ARE REPORTED AS A TOTAL OF THE TWO

TABLE II (ALL UNITS ARE MICROGRAMS/LITER)

PARAMETER	CAS #	METHOD DETECTION LIMIT IN REAGENT WATER	METHOD BLANK LIMIT IN REAGENT WATER
ANILINE	62-53-3	1.5	3
BIS(2-CHLOROETHYL)ETHER	111-44-4	1.5	3
PHENOL	108-95-2	2	4
2-CHLOROPHENOL	95-57-8	2	4
1,3-DICHLOROBENZENE	541-73-1	2	4
1,4-DICHLOROBENZENE	106-46-7	2	4
1,2-DICHLOROBENZENE	95-50-1	2.5	5
BENZYL ALCOHOL	100-51-6	2	4
BIS(2-CHLOROISOPROPYL) ETHER	39638-32-9	2.5	5
2-METHYLPHENOL	95-48-7	1	2
HEXACHLOROETHANE	67-72-1	2	4
N-NITROSODIPROPYLAMINE	621-64-7	1.5	3
NITROBENZENE	98-95-3	2.5	5
4-METHYLPHENOL	106-44-5	1	2
ISOPHORONE	78-59-1	2.5	5
2-NITROPHENOL	88-75-5	2	4
2,4-DIMETHYLPHENOL	105-67-9	2	4
BIS(2-CHLOROETHOXY)METHANE	111-91-1	2.5	5
2,4-DICHLOROPHENOL	120-83-2	2	4
1,2,4-TRICHLOROBENZENE	120-82-1	2	4
NAPHTHALENE	91-20-3	2	4
4-CHLOROANILINE	106-47-8	2	4
HEXACHLOROBUTADIENE	87-68-3	2.5	5
BENZOIC ACID	65-85-0	(30)	(60)
2-METHYLNAPTHALENE	91-57-6	2	4
4-CHLORO-3-METHYLPHENOL	59-50-7	1.5	3
HEXACHLOROCYCLOPENTADIENE	77-47-4	2	4
2,4,6-TRICHLOROPHENOL	88-06-2	1.5	3
2,4,5-TRICHLOROPHENOL	95-95-4	1.5	3
2-CHLORONAPTHALENE	91-58-7	1.5	3
ACENAPTHYLENE	208-96-8	1.5	3
DIMETHYL PHTHALATE	131-11-3	1.5	3
2,6-DINITROTOLUENE	606-20-2	1	2
ACENAPHTHENE	83-32-9	1.5	3
3-NITROANILINE	99-09-2	2.5	5
DIBENZOFURAN	132-64-9	1	2
2,4-DINITROPHENOL	51-28-5	(15)	(30)
2,4-DINITROTOLUENE	121-14-2	1	2

TABLE II (CONTINUED) (ALL UNITS ARE MICROGRAMS/LITER)

PARAMETER	CAS #	METHOD DETECTION LIMIT IN REAGENT WATER	METHOD BLANK LIMIT IN REAGENT WATER
FLUORENE	86-73-7	1	2
4-NITROPHENOL	100-02-7	1.5	3
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	1	2
DIETHYL PHTHALATE	84-66-2	1	2
4,6-DINITRO-2-METHYLPHENOL	534-52-1	(15)	(30)
1,2-DIPHENYLHYDRAZINE	122-66-7	1	2
N-NITROSODIPHENYLAMINE *	86-30-6		
DIPHENYLAMINE *	122-39-4	1.5	3
4-NITROANILINE	100-01-6	3	6
4-BROMOPHENYL PHENYL ETHER	101-55-3	1.5	3
HEXACHLOROBENZENE	118-74-1	1.5	3
PENTACHLOROPHENOL	87-86-5	2	4
PHENANTHRENE	85-01-8	1	2
ANTHRACENE	120-12-7	2.5	5
DI-n-BUTYL PHTHALATE	84-74-2	2	4
FLUORANTHENE	206-44-0	1.5	3
PYRENE	129-00-0	1.5	3
BUTYL BENZYL PHTHALATE	85-68-7	3.5	7
CHRYSENE **	218-01-9		
BENZO(a)ANTHRACENE **	56-55-3	1.5	3
BIS(2-ETHYLHEXYL) PHTHALATE	117-81-7	1	2
DI-n-OCTYL PHTHALATE	117-84-0	1.5	3
BENZO(b)FLUORANTHENE ***	205-99-2		
BENZO(k)FLUORANTHENE ***	207-08-9	1.5	3
BENZO(a)PYRENE	50-32-8	2	4
INDENO(1,2,3-cd)PYRENE	193-39-5	3.5	7
DIBENZO(a,h)ANTHRACENE	53-70-3	2.5	5
BENZO(g,h,i)PERYLENE	191-24-2	4	8
2-NITROANILINE	88-74-4	1	2

* THESE TWO PARAMETERS ARE REPORTED AS A TOTAL
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VALUES IN PARENTHESES ARE ESTIMATES. ACTUAL VALUES ARE BEING DETERMINED AT THIS TIME.

TABLE III (ALL UNITS ARE MICROGRAMS/LITER)

PARAMETER	CAS #	METHOD DET. LIMIT IN REAGENT WATER	SPIKE LEVEL	CONTROL LIMITS IN REAGENT WATER
ALDRIN	309-00-2	0.005	5	3 - 6
alpha BHC	319-84-6	(0.010)		
beta BHC	319-85-7	(0.005)		
delta BHC	319-86-8	(0.005)		
gama BHC(LINDANE)	58-89-9	0.005	2	1 - 4
CHLORDANE	57-74-9	(0.020)		
4,4'-DDD	72-54-8	(0.020)		
4,4'-DDE	72-55-9	(0.005)		
4,4'-DDT	50-29-3	0.020	15	10 - 18
DIELDRIN	60-57-1	0.010	5	3 - 6
ENDOSULFAN I	959-98-8	0.010	6	4 - 7
ENDOSULFAN II	33213-65-9	0.010		
ENDOSULFAN SULFATE	1031-07-8	(0.10)		
ENDRIN	72-20-8	0.010	10	6 - 12
ENDRIN ALDEHYDE	7421-93-4	(0.030)		
ENDRIN KETONE	53494-70-5	(0.030)		
HEPTACHLOR	76-44-8	0.030	2	1 - 4
HEPTACHLOR EPOXIDE	1024-57-3	0.005		
4,4'-METHOXYCHLOR	72-43-5	0.020	20	15 - 28
TOXAPHENE	8001-35-2	(0.25)		
PCB-1242	53469-21-9	(0.10)	3	2 - 6
PCB-1248	12672-29-6	(0.10)		
PCB-1254	11097-69-1	(0.10)		
PCB-1260	11096-82-5	(0.10)		

VALUES IN PARENTHESES ARE ESTIMATES. ACTUAL VALUES ARE CURRENTLY BEING DETERMINED.

Table IV.

Parameter	Method Detection Limit (ug/l)
**ICP Metal	
*Al	80
*Ba	5
*Be	1
B	80
*Cd	2
*Ca	500
*Cr	8
*Co	6
*Cu	6
*Fe	80
*Pb	70
Li	10
*Mg	100
*Mn	5
*Mo	10
*Ni	15
K	2000
*Ag	3
*Na	1000
Sr	10
Sn	40
Ti	25
*V	5
Y	5
*Zn	40
Furnace AA Metal	
*As	2
*Pb	2
*Se	2
Cold Vapor AA	
*Hg	0.1

Parameter	Method Detection Limit (ug/l)
CN/screening	5
CN/colorimetric	8
NH_3-N	50
NO_3+NO_2-N	100

* These are the metals of primary interest.
**The method detection limits of ICP metals are estimated values.

III. PROJECT ORGANIZATION AND RESPONSIBILITY

A. Management

1. Karen Waldvogel: Remedial Project Manager - Sample Collector

2. Central Regional Laboratory (CRL), Region V - Analytical

B. Field Activities

1. Karen Waldvogel: Remedial Project Manager, U.S. EPA.

C. Laboratory Operations

CRL, Region V, U.S. EPA.

D. Data Assessment

QC Coordinator, CRL, Region V, U.S. EPA.

E. Quality Assurance Officers

James H. Adams, Jr., Chief, Quality Assurance Office (QAO), and QC Coordinator, CRL, Region V, U.S. EPA.

IV. QUALITY ASSURANCE OBJECTIVES (Specify Protocols to Follow and/or Objectives to Meet)

One field trip blank and one field duplicate (O'Niel well) will be collected. QA objectives are the QC criteria of existing CRL methods for residential well monitoring program.

A. Accuracy

Matrix spikes in the reference and control samples noted in the methods will be 100±30% for organics and 100±20% for inorganics. Matrix spike duplicate for organics will be 100±30%.

Surrogate matrix spike recoveries will be as specified in the CRL's methods.

B. Precision

Duplicate sample results should agree within 100±30% for organics and 100±20% for inorganics.

C. Detection Limits

Detection limits are specified in the CRL methods referenced.

V. Sampling Plan

A. Sampling Procedures

Each residential well will be sampled without passing through a water softener or a carbon filter after running water for at least 15 minutes. All samples will be collected in a day, requiring only one field trip blank. Field duplicates will be sampled from O'Niel well for all the parameters of interest.

For VOC organic analyses, samples will be collected by running water very slowly so that no air bubbles would go in the containers and no head space will be allowed in the containers.

B. Sample Containers and Preservatives

Sample containers will be supplied by CRL.

The preservation procedures, container types and volumes are summarized below:

Parameter	Container	Preservatives
Inorganics		
all metals except Hg	1 liter polyethylene	5 ml of 50% HNO_3
Hg	100 ml polyethylene	0.5% HNO_3 + 0.05% $K_2Cr_2O_7$
CN	1 liter polyethylene	5 ml 6N NaOH
NH_3-N and NO_3+NO_2-N	500 ml polyethylene	1 ml conc. H_2SO_4 to pH <2, cool to 4°C
Organics		
VOC	(2) 40 ml glass with Teflon lined septum caps	cool to 4°C
B/N/A	(1) 1/2 gal glass with Teflon lined caps	cool to 4°C
Pest/PCBs	(1) 1/2 gal glass with Teflon lined caps	cool to 4°C

For O'Niel Well, additional four 1/2 gal and two 40 ml are necessary for matrix spike and matrix spike duplicate for organic analyses.

C. Sample Custody

Samples will be collected by Karen Waldvogel, RPM and will be under her custody until delivered to CRL. Upon receipt by CRL, they will be under CRL's custody. Appropriate Chain-of-Custody forms will be accompanied with the samples.

Evidence files for laboratory analyses will be maintained at CRL.

VI. ANALYTICAL SERVICES

Central Regional Laboratory, Region V, U.S. EPA.

1. Analytical Procedure
2. Calibration Procedures
3. Internal Quality Control Checks
4. Data Reduction, Validation, and Reporting
5. Performanace and Systems Audits
6. Data Assessment
7. Preventative Maintenance Procedures/Schedules
8. Procedures to Assess Precision, Accuracy, Sensitivity, and Completeness
9. Corrective Action

These are predetermined for CRL residential well water monitoring methods (see attachment).

VII. QUALITY ASSURANCE REPORTS

None